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Sunlight Readable LCD!

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LITEMAX
DLF/DLH3245
Sunlight Readable 32” LED B/L LCD

User Manual

(5th Edition 2012/1/17)
All information is subject to change without notice.

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RECORD OF REVISION

Version and Date	Page	Old Description	New Description	Remark
Nov,12,2010	all		Initial Release	
Dec,20,2010	all		Updated data	
May,09,2011	15~17	Update LID driving board data	Update LID driving board data	
Oct,21,2011	all		Update data	

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1.0 GENERAL DESCRIPTION

DLF_DLH3245 is 32” wide color TFT-LCD module as active switching devices with 1,000nits LED backlight powered by Durapixel™ technology. This module has a 32 inch diagonally measured active area with WXGA resolutions (1366 horizontal by 768 vertical pixel array). Each pixel is divided into RED, GREEN, BLUE dots which are arranged in vertical stripe and this module can display 16.7M colors.

1.1 FEATURES

- Sunlight Readable
- LED Backlight
- High Shock & Vibration Resistance
- Low Power Consumption
- High Uniformity
- Low EMI Noise
- Wide Dimming
- Life Expectancy

1.2 GENERAL SPECIFICATIONS

Model No.	**DLF3245**	**DLH3245**
Description	32" TFT LCD, LED Backlight 1000nits,WXGA	
Display Area (mm)	697.69 (H) x 392.26(V) mm	
Brightness	1,000 cd/m^2	
Resolution	1366 x 768 (WXGA)	
Contrast Ratio	2500 : 1	
Pixel Pitch (mm)	0.51075(H) x 0.51075(V)	
Viewing Angle	176°(H), 176°(V)	
Display Colors	16.7M colors	
Response Time (Typical)	7ms (Typical)	
Sync	LVDS	
Power Consumption	60W	
Dimensions (mm)	737.6x426.2x16mm	
Weight (Net)	5.2Kg	5.4Kg

1.3 Absolute Maximum Ratings

Parameter	Symbol	Condition	Ratings	Unit	Remark
Input voltage (for Source-Control PWB)	V_I	Ta=25°C	-0.3 ~ +3.6	V	[Note 1]
+12V supply voltage (for Source-Control PWB)	V_{CC}	Ta=25°C	0 ~ +15	V	
Vcom control voltage	V_{CTL}	Ta=25°C	-0.3 ~ +16	V	
Storage temperature	Tstg	-	-25 ~ +60	°C	[Note 2]
Operation temperature (Ambient)	Topa	-	0 ~ +50	°C	

[Note 1] SELLVDS

[Note 2] Humidity 95%RH Max.(Ta ≤ 40°C)

Maximum wet-bulb temperature is 39°C or less (Ta > 40°C). No condensation.

1.4 Input Terminals

CN1 (Interface signals and +12V DC power supply; shown in Fig.1)

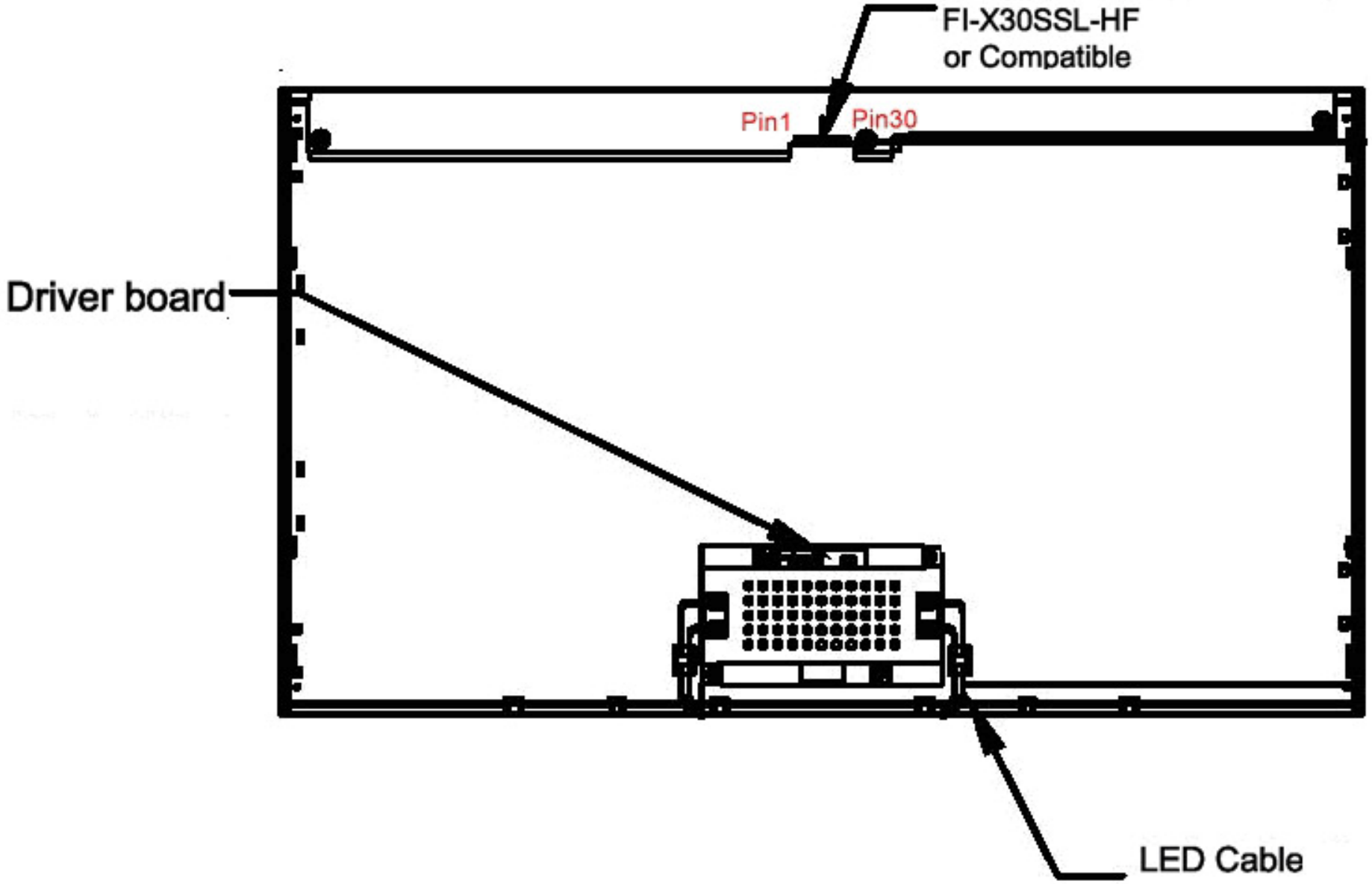
Used connector: GT103-30S-H23-D-E2500 (LSMtron)

Mated connector: FI-X30H/FI-X30HL, FI-X30C/FI-X30C2L
or FI-X30M (Japan Aviation Electronics Ind. , Ltd.)

Mated LVDS transmitter: THC63LVDM83R (THine) or equivalent device

Pin No.	Symbol	Function	Remark
1	VCC	+12V Power Supply	
2	VCC	+12V Power Supply	
3	VCC	+12V Power Supply	
4	VCC	+12V Power Supply	
5	GND	Ground	
6	GND	Ground	
7	GND	Ground	
8	GND	Ground	
9	SELLVDS	Select LVDS data order [Note 1]	Default: Pull down (L:GND) [Note 2]
10	Reserved	Not Available	
11	GND	Ground	
12	RIN0-	Negative (-) LVDS differential data input	LVDS
13	RIN0+	Positive (+) LVDS differential data input	LVDS
14	GND	Ground	
15	RIN1-	Negative (-) LVDS differential data input	LVDS
16	RIN1+	Positive (+) LVDS differential data input	LVDS
17	GND	Ground	
18	RIN2-	Negative (-) LVDS differential data input	LVDS
19	RIN2+	Positive (+) LVDS differential data input	LVDS
20	GND	Ground	
21	CLKIN-	Clock Signal(-)	LVDS
22	CLKIN+	Clock Signal(+)	LVDS
23	GND	Ground	
24	RIN3-	Negative (-) LVDS differential data input	LVDS
25	RIN3+	Positive (+) LVDS differential data input	LVDS
26	GND	Ground	
27	Reserved	Not Available	
28	Reserved	Not Available	
29	GND	Ground	
30	GND	Ground	

[Note] GND of a liquid crystal panel drive part has connected with a module chassis.


FI-X30SSL-HF
or Compatible
Pin1
Pin30
Driver board
LED Cable

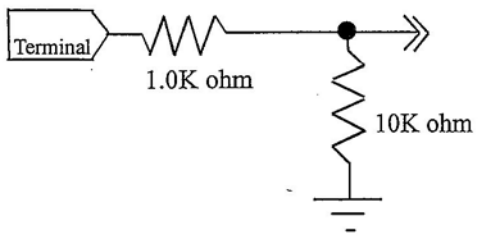
[Note1] LVDS data order

Transmitter		SELLVDS	
Pin No	Data	=L(GND) or Open	= H(3.3V)
51	TA0	R0(LSB)	R2
52	TA1	R1	R3
54	TA2	R2	R4
55	TA3	R3	R5
56	TA4	R4	R6
3	TA5	R5	R7(MSB)
4	TA6	G0(LSB)	G2
6	TB0	G1	G3
7	TB1	G2	G4
11	TB2	G3	G5
12	TB3	G4	G6
14	TB4	G5	G7(MSB)
15	TB5	B0(LSB)	B2
19	TB6	B1	B3
20	TC0	B2	B4
22	TC1	B3	B5
23	TC2	B4	B6
24	TC3	B5	B7(MSB)
27	TC4	NA	NA
28	TC5	NA	NA
30	TC6	DE(*)	DE(*)
50	TD0	R6	R0(LSB)
2	TD1	R7(MSB)	R1
8	TD2	G6	G0(LSB)
10	TD3	G7(MSB)	G1
16	TD4	B6	B0(LSB)
18	TD5	B7(MSB)	B1
25	TD6	NA	NA

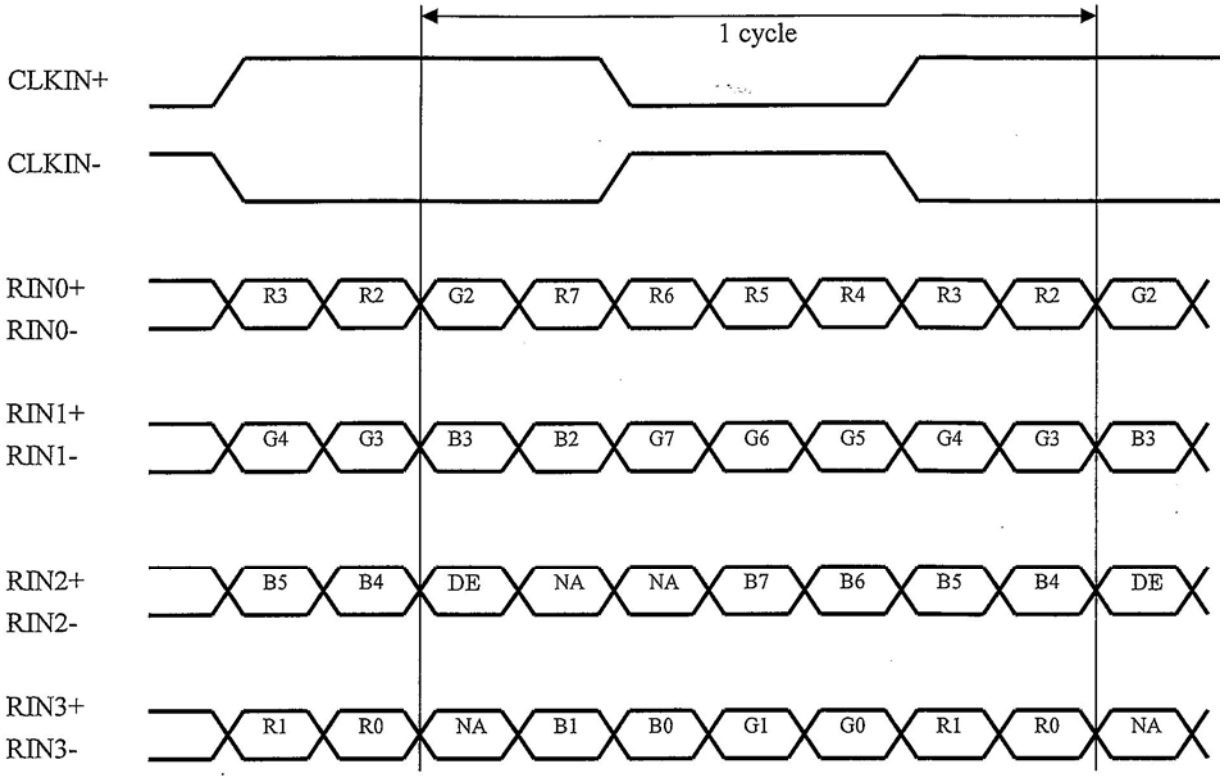
NA: Not Available

(*) Since the display position is prescribed by the rise of DE (Display Enable) signal, please do not fix DE signal at "High " during operation.

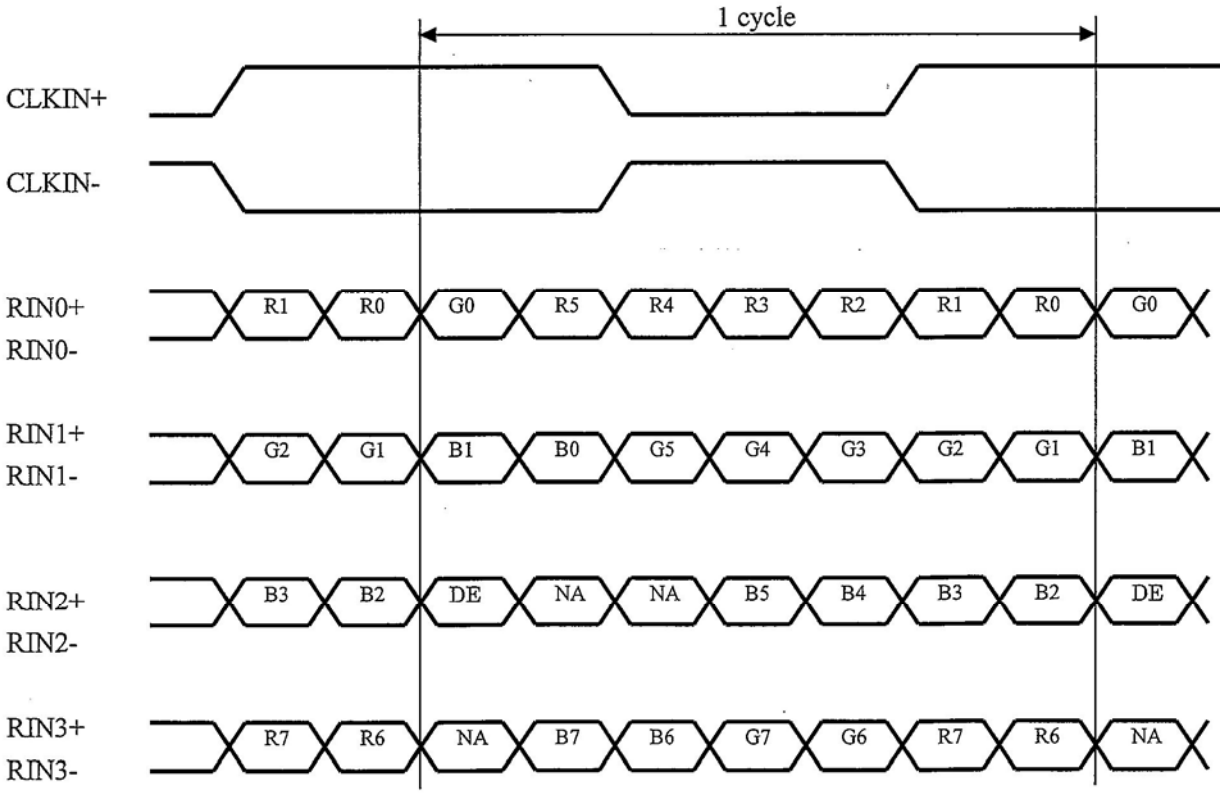
[Note 2] The equivalent circuit figure of the terminal



SELLVDS= High (3.3V)



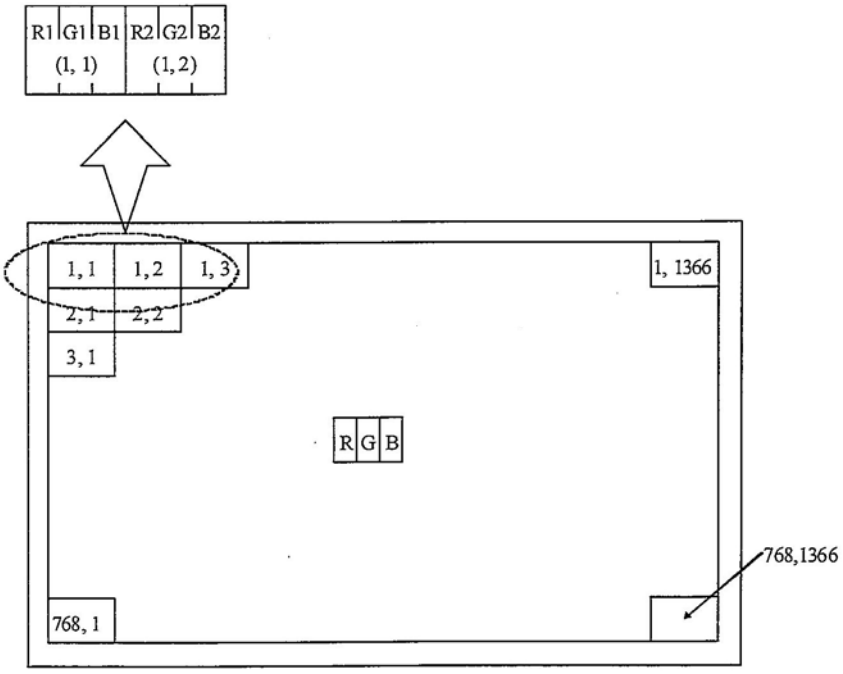
SELLVDS= Low (GND) or Open



DE: Display Enable

NA: Not Available (Fixed Low)

Display position of data



Display Position of Data (V,H)

2.0 Electrical characteristics

Electrical Characteristics of Input Signals

Ta=25°C

Parameter		Symbol	Min.	Typ.	Max.	Uniit	Remark
+12V supply voltage	Supply voltage	V_{CC}	+11.4	+12.0	+12.6	V	[Note 1]
	Current consumption	I_{CC}	-	330	600	mA	[Note 2]
		I_{RUSH}	-	1100	2500	mA	[Note 5]
		T_{RUSH}	-	0.5	-	ms	[Note 5]
Permissible input ripple voltage		V_{RP}	-	-	100	mV_{P-P}	Vcc = +12.0V
Differential input threshold voltage	High	V_{TH}	-	-	100	mV	*V_{CM} = +1.2V
	Low	V_{TL}	-100	-	-	mV	[Note 4]
Input low voltage		V_{IL}	0	-	0.7	V	[Note 3]
Input high voltage		V_{IH}	2.6	-	3.3	V	
Input leak current (Low)		I_{IL}	-	-	400	μA	V_I = 0V [Note 3]
Input leak current (High)		I_{IH}	-	-	100	μA	V_I =3.3V [Note 3]
Terminal resistor		R_T	-	100	-	Ω	Differential input

[Note] *V_{CM}: Common mode voltage of LVDS driver.

[Note 1]

Input voltage sequences

50us< t1 ≤ 20ms

20ms< t2-1

20ms< t2-2

0 < t3 ≤ 1s

t4 ≥ 1s

t5 ≥ 300ms

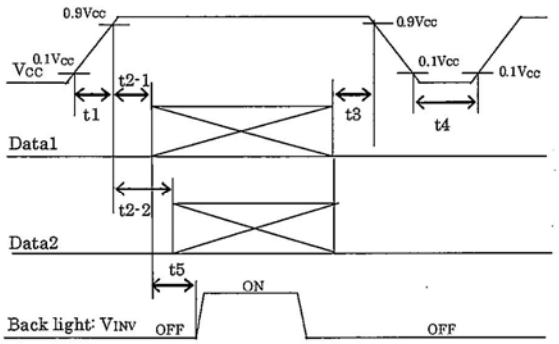
Dip conditions for supply voltage

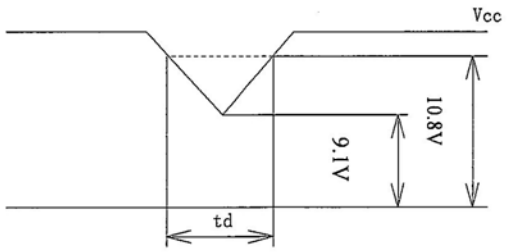
a) 9.1V ≤ V_{CC} < 10.8V

td ≤ 10ms

b) V_{CC} < 9.1V

Dip conditions for supply voltage is based on input voltage sequence.





※ Data1: CLKIN±,RIN0±,RIN1±, RIN2±, RIN3±

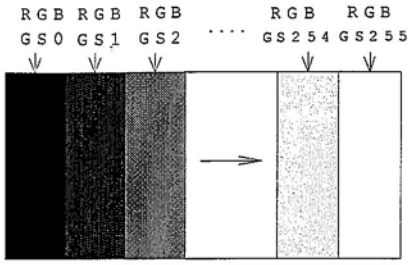
※ Data2: SELLVDS

※ About the relation between data input and back light lighting, we recommend the above-mentioned input sequence.

If the back light is switched on before a panel operation begins or after a panel operation stops, the screen may not be displayed properly. But this phenomenon is not caused by change of an incoming signal, and does not give damage to a liquid crystal display.

[Note 2]Typical current situation: 256 gray-bar pattern (V_{CC} = +12.0V)

The explanation of RGB gray scale is seen in section 8.

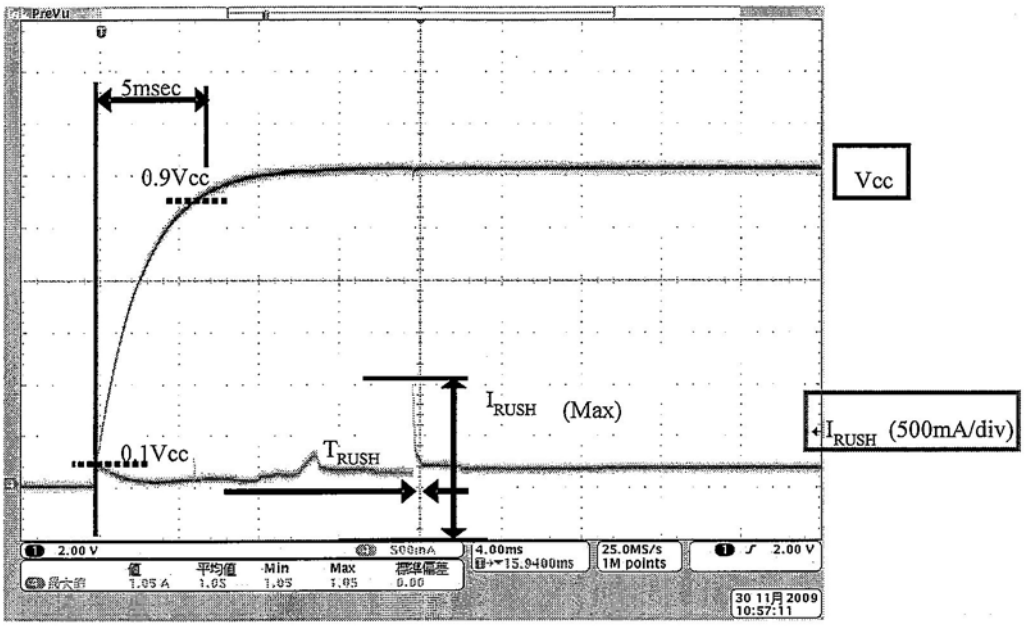


V_{CC} = +12.0V
CK = 82.0MHz
Th = 20.68μs

[Note 3] SELLVDS

[Note 4] CLKIN+/CLKIN-, RIN0+/RIN0-, RIN1+/RIN1-, RIN2+/RIN2-, RIN3+/RIN3-

[Note 5] The rush current corrugation at the time of power on



4ms/div

3.0 Timing Characteristic of input signal

Timing Characteristic

Timing diagrams of input signal are shown in Fig.2

Parameter		Symbol	Min.	Typ.	Max.	Unit
Clock	Frequency	1/Tc	72	82	85	MHz
Data enable signal	Horizontal period	TH	1540	1696	1940	clock
			19.84	20.68	-	µs
	Horizontal period (High)	THd	1366	1366	1366	clock
	Vertical period	TV	778	806	972	line
	Vertical period (High)	TVd	768	768	768	line

[Note] *When a vertical period is very long, a flicker may occur.

*Please turn off the module after it shows the black screen.

*Please make sure that a length of vertical period should be an integral multiple of horizontal period otherwise the screen may not display properly.

*Please be careful not to fall below the minimum horizontal period, otherwise the display may be dark.

We will check the display operation for your final setting of drive timing, so please inform us of your final setting.

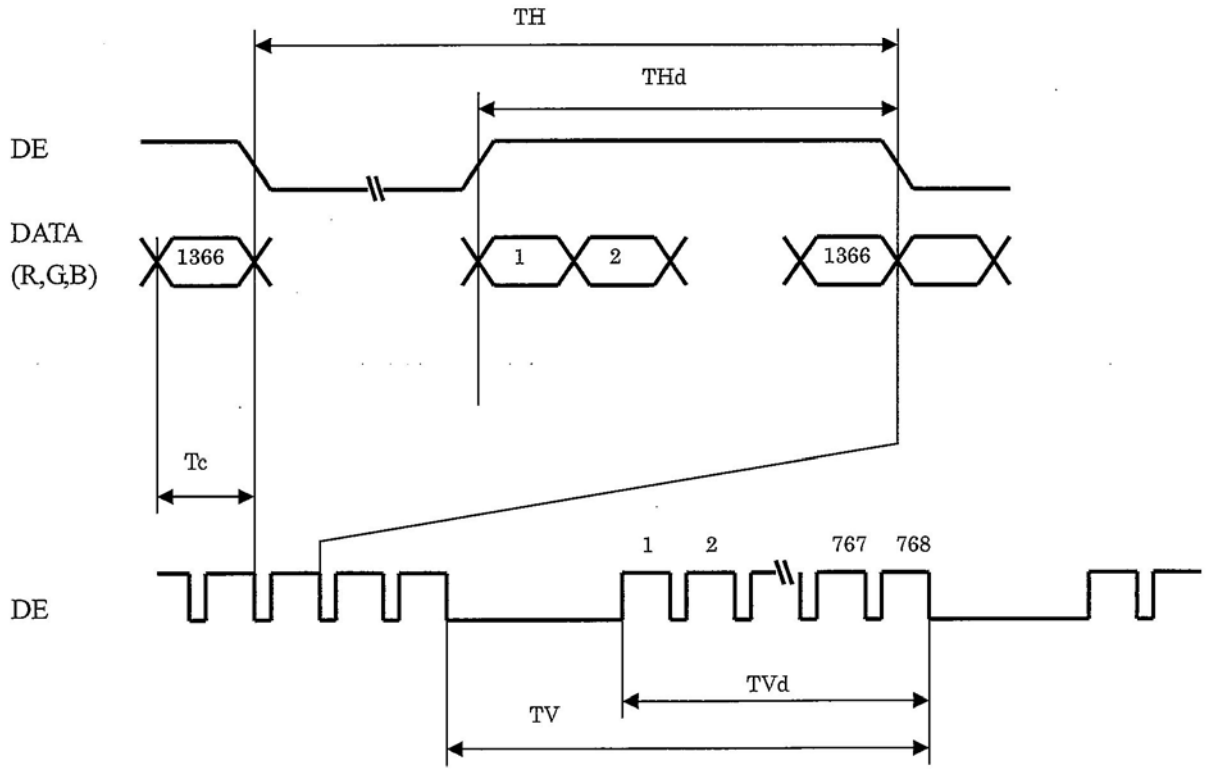
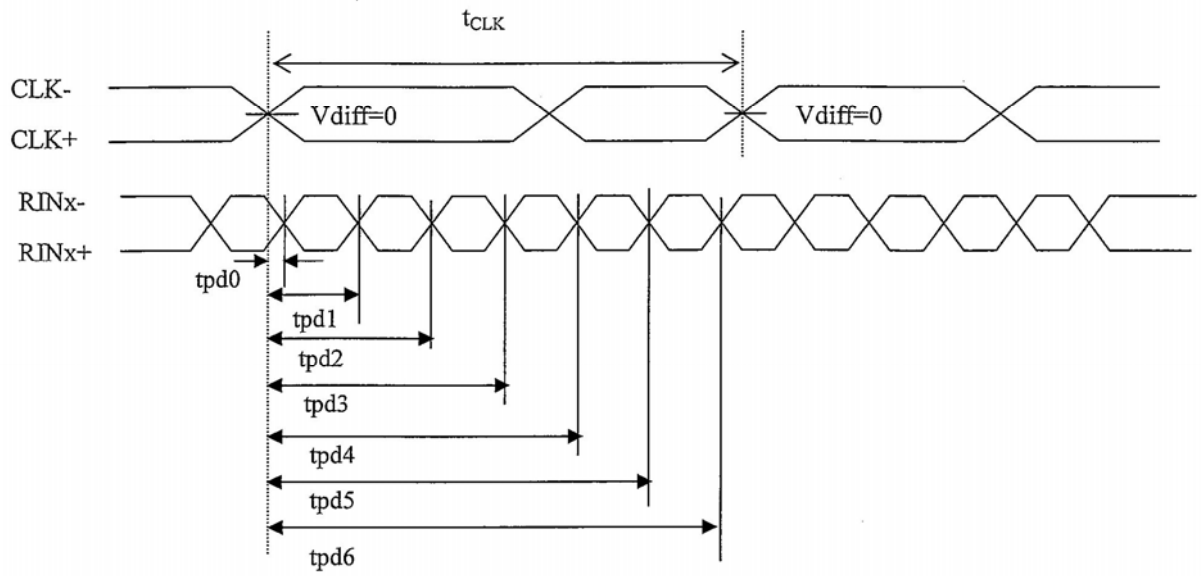


Fig.2 Timing diagram of input signals

LVDS signal characteristics



The item		Symbol	min.	typ.	max.	unit
Data position	Delay time, CLK rising edge to serial bit position 0	tpd0	-0.40	0	0.40	ns
	Delay time, CLK rising edge to serial bit position 1	tpd1	typ-0.40	1* t_{CLK} /7	typ+0.40	
	Delay time, CLK rising edge to serial bit position 2	tpd2	typ-0.40	2* t_{CLK} /7	typ+0.40	
	Delay time, CLK rising edge to serial bit position 3	tpd3	typ-0.40	3* t_{CLK} /7	typ+0.40	
	Delay time, CLK rising edge to serial bit position 4	tpd4	typ-0.40	4* t_{CLK} /7	typ+0.40	
	Delay time, CLK rising edge to serial bit position 5	tpd5	typ-0.40	5* t_{CLK} /7	typ+0.40	
	Delay time, CLK rising edge to serial bit position 6	tpd6	typ-0.40	6* t_{CLK} /7	typ+0.40	

Input Signal, Basic Display Colors and Gray Scale of Each Color

	Colors & Gray scale	Gray Scale	Data signal																							
			R0	R1	R2	R3	R4	R5	R6	R7	G0	G1	G2	G3	G4	G5	G6	G7	B0	B1	B2	B3	B4	B5	B6	B7
Basic Color	Black	–	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue	–	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Green	–	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Cyan	–	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Red	–	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Magenta	–	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Yellow	–	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	White	–	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gray Scale of Red	Black	GS0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	⇧	GS1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Darker	GS2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	⇧	↓					↓								↓								↓			
	⇩	↓					↓								↓								↓			
	Brighter	GS253	1	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	⇩	GS254	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red	GS255	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Scale of Green	Black	GS0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	⇧	GS1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Darker	GS2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	⇧	↓					↓								↓								↓			
	⇩	↓					↓								↓								↓			
	Brighter	GS253	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	⇩	GS254	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Green	GS255	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Gray Scale of Blue	Black	GS0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	⇧	GS1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	Darker	GS2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	⇧	↓					↓								↓								↓			
	⇩	↓					↓								↓								↓			
	Brighter	GS253	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1
	⇩	GS254	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1
	Blue	GS255	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

0: Low level voltage 1: High level voltage

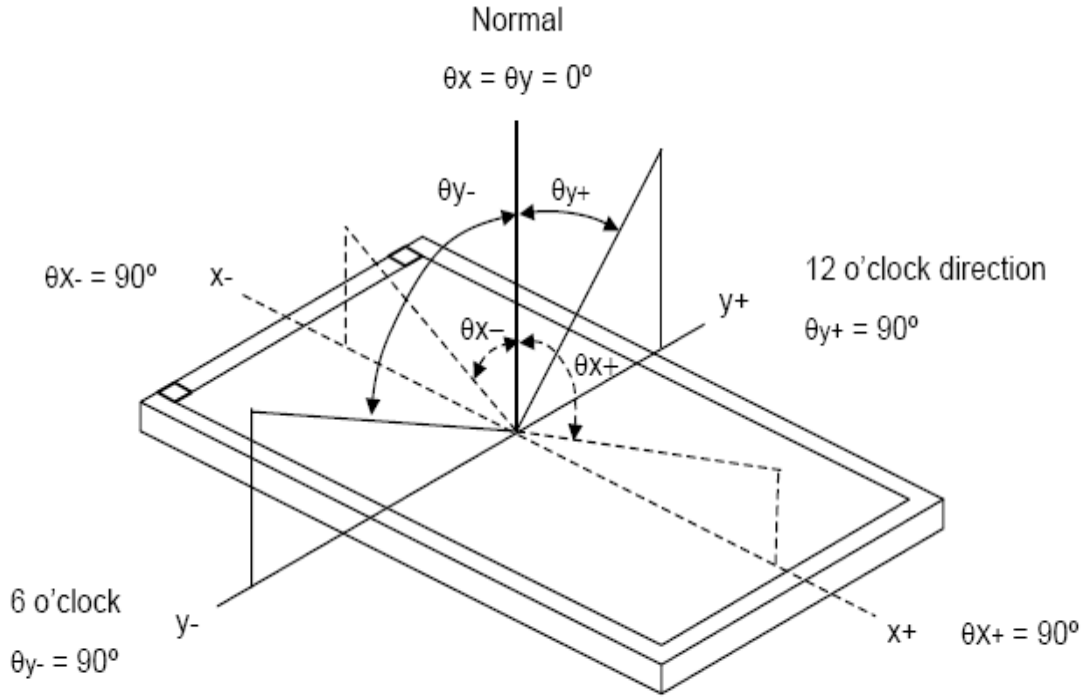
Each basic color can be displayed in 256 gray scales from 8 bit data signals. According to the combination of total 24 bit data signals, the 16,777,216 colors can be displayed on the screen.

4.0 OPTICAL SPECIFICATION

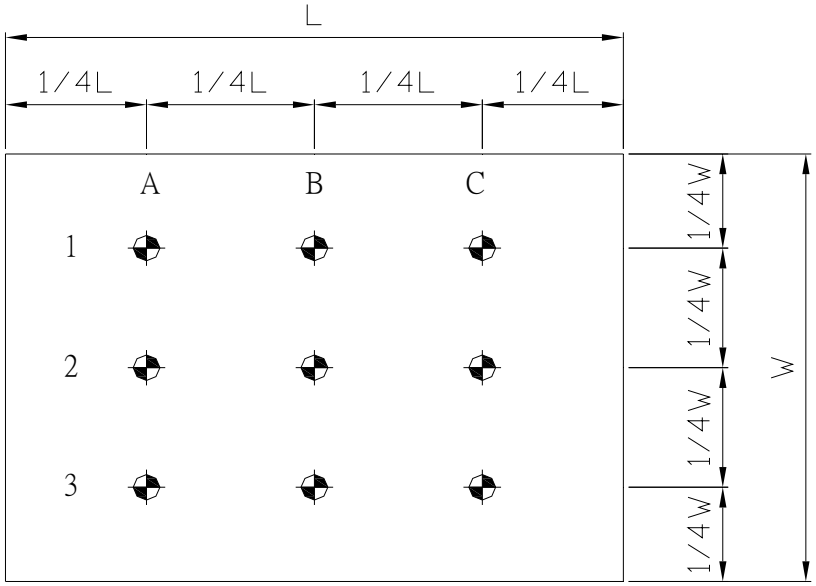
Item		Symbol	Condition	Data	Unit	Note
Color chromaticity	Red	Rx	θx=0 θy=0 BM-7	0.597±0.03	-	Test Mode：(1)(2)(3)
		Ry		0.369±0.03	-	
	Green	Gx		0.324±0.03	-	
		Gy		0.598±0.03	-	
	Blue	Bx		0.148±0.03	-	
		By		0.122±0.03	-	
	White	Wx		0.306±0.03	-	
		Wy		0.368±0.03	-	
Center Luminance of White		Lc		1000±10%	cd/㎡	
Average		La		970	cd/㎡	
Uniform		Lu		80±5	%	
Contrast Ratio		CR	θx=0 θy=0 Klein K-10	900	-	Test Mode：(1)(4)
Color Saturation		NTSC		50	%	
Viewing Angle	Horizontal	θx+	CR≧10	88	Deg	Test Mode：(1)(3)
		θx-		88		
	Vertical	θy+		88		
		θy-		88		

Test Mode：

（**1**） Definition of Viewing Angle（θ_x，θ_y）：

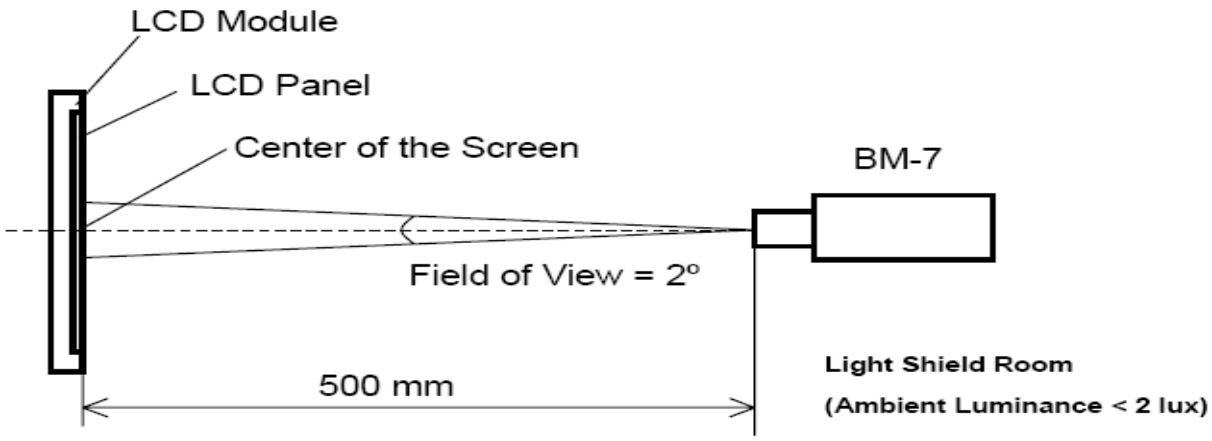


（**2**） Definition of Test Point：

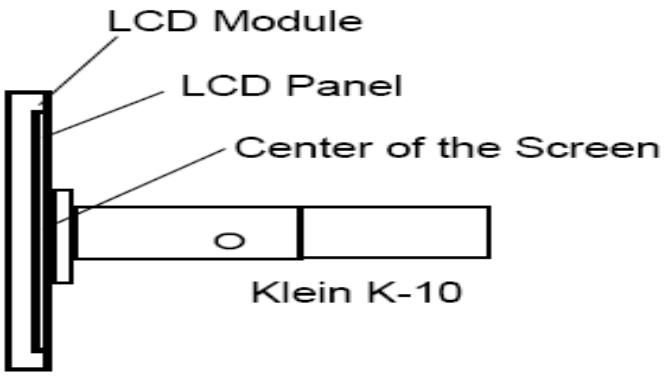


Active Area

（**3**）BM-7 Measurement Setup:



（**4**）Klein K-10 Measurement Setup:



5.0 LED DRIVING BOARD SPECIFICATIONS(LID29A01)

1. LED Application

This specification is applied to LED converter unit for DLF/DLH3245 (1000 nits) LED backlight.

2. Operating Characteristics

Item	Symbol	Conditions	TYP	.	MAX.	Unit	Remark
Input Voltage	Vin		12.0	----	14.0	V	
Input Current (Low Brightness)	IinL	VIN=VCC,Vadj=5V	----	-----	-----	mA	
Input Current (High Brightness)	IinH	VIN=VCC,Vadj=0V	4.71	----	4.03	A	
LED Current (Low Brightness)	IoutL	VIN=VCC,Vadj=5V	----	-----	-----	Arms	
LED Current (High Brightness)	IoutH	VIN=VCC,Vadj=0V	1	----	1	A	J1 and J2 output
			1	----	1	A	J5 and J6 output
			2	----	2	A	The output assembles
Working Frequency	Freq	VIN=VCC,Vadj=0V	517.75	545	572.25	KHZ	
PWM Frequency	Freq	VIN=VCC	180	200	220	HZ	
Brightness Control	Vadj	Connection of Voltage	0.5	-----	4.8	V	
ON/OFF Control	Von/off	Normal Operation	2	-----	5	V	
Output Voltage	Vout	VIN=VCC,Vadj=0V	26.56		26.57	V	J1 and J2 output
			26.12		26.12	V	J5 and J6 output
Efficiency	η	VIN=VCC,Vadj=0V	93.21	----	93.39	%	Note 1

Note 1:Efficiency＝｛[(J1/J2 Iout* J1/J2 Vout)+ (J5/J6 Iout * J5/J6 Vout)〕/(IinH* Vin)｝
* 100%,Tolerance ±0.5%

3. Working spec.

Item	Symbol	Conditions	MIN.	TYP.	MAX.	Unit	Remark
Working Frequency	Freq	VIN=VCC,Vadj=0V	490.5	545	599.5	KHZ	
PWM Frequency	Freq	VIN=VCC	180	200	220	HZ	

4. Connector Socket)

4-1. Input Connector:CN1(JST S10B-PH-K-S or Compatible)

:

PIN No	Symbol	Description
1	Vin	DC +12V
2	Vin	DC +12V
3	Vin	DC +12V
4	Vin	DC +12V
5	Vin	DC +12V
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	GND	Ground
10	GND	Ground

4-2. Input Connector:CN2(JST S03B-PH-K-S or Compatible)

PIN No	Symbol	Description
1	Brightness	ON/OFF Control 0.8V(OFF) 2~5V(ON)
2	Control	Brightness Control 5V~0V
3	GND	Ground

4-3 .Output Connector:J1,J2,J5.J6(JST S2B-EH-TS or Compatible)

:

PIN NO	Symbol	Description
1	Output	LED High Voltage(+)
2	Output	LED Low Voltage (-)

5. Mechanical Characteristics

Dimension: 90mm*160mm*10mm

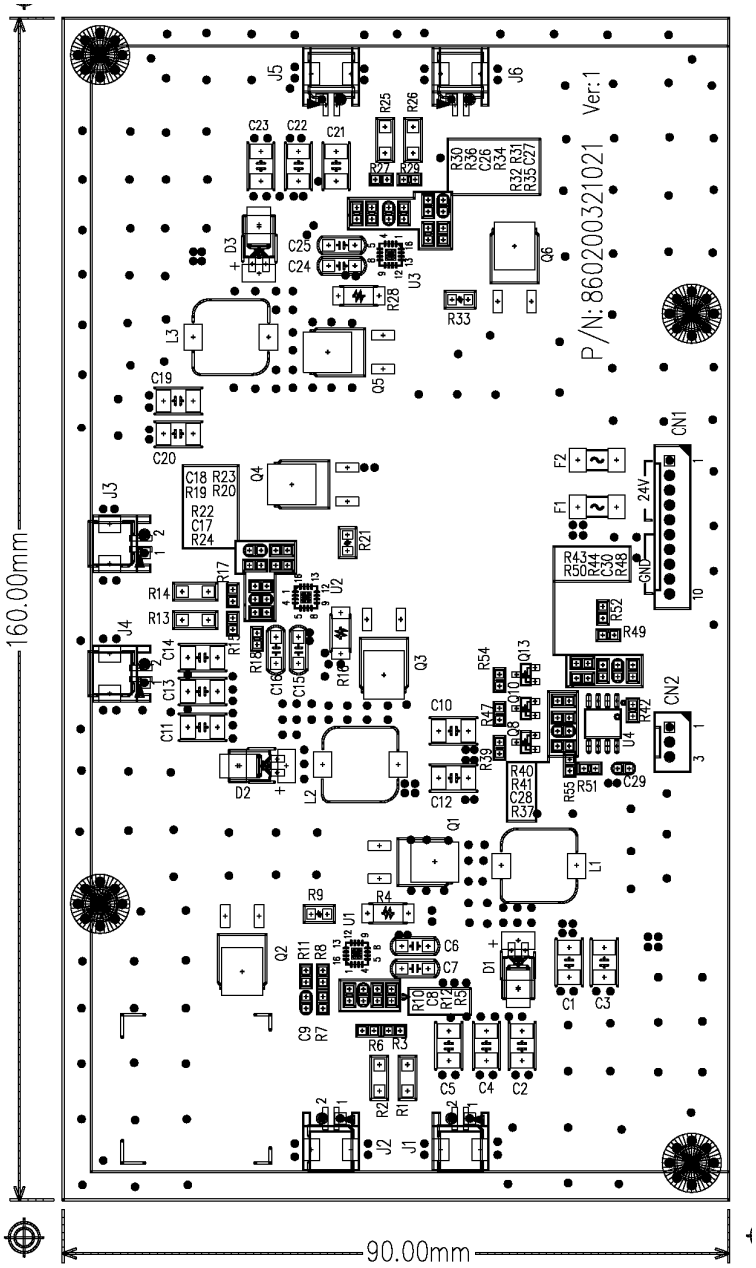
Dimension: 90mm*160mm*10mm

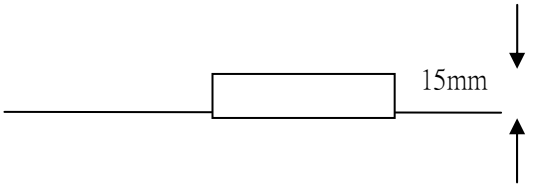
INPUT CONNECTOR
CN1:

PIN1:VIN
PIN2:VIN
PIN3:VIN
PIN4:VIN
PIN5:VIN
PIN6:GND
PIN7:GND
PIN8:GND
PIN9:GND
PIN10:GND

INPUT CONNECTOR
CN2:

PIN1:On/Off
PIN2: BRIGHTNESS
PIN3 :GND





6.0 AD2662GDVAR SPECIFICATIONS(DLH3245 only)

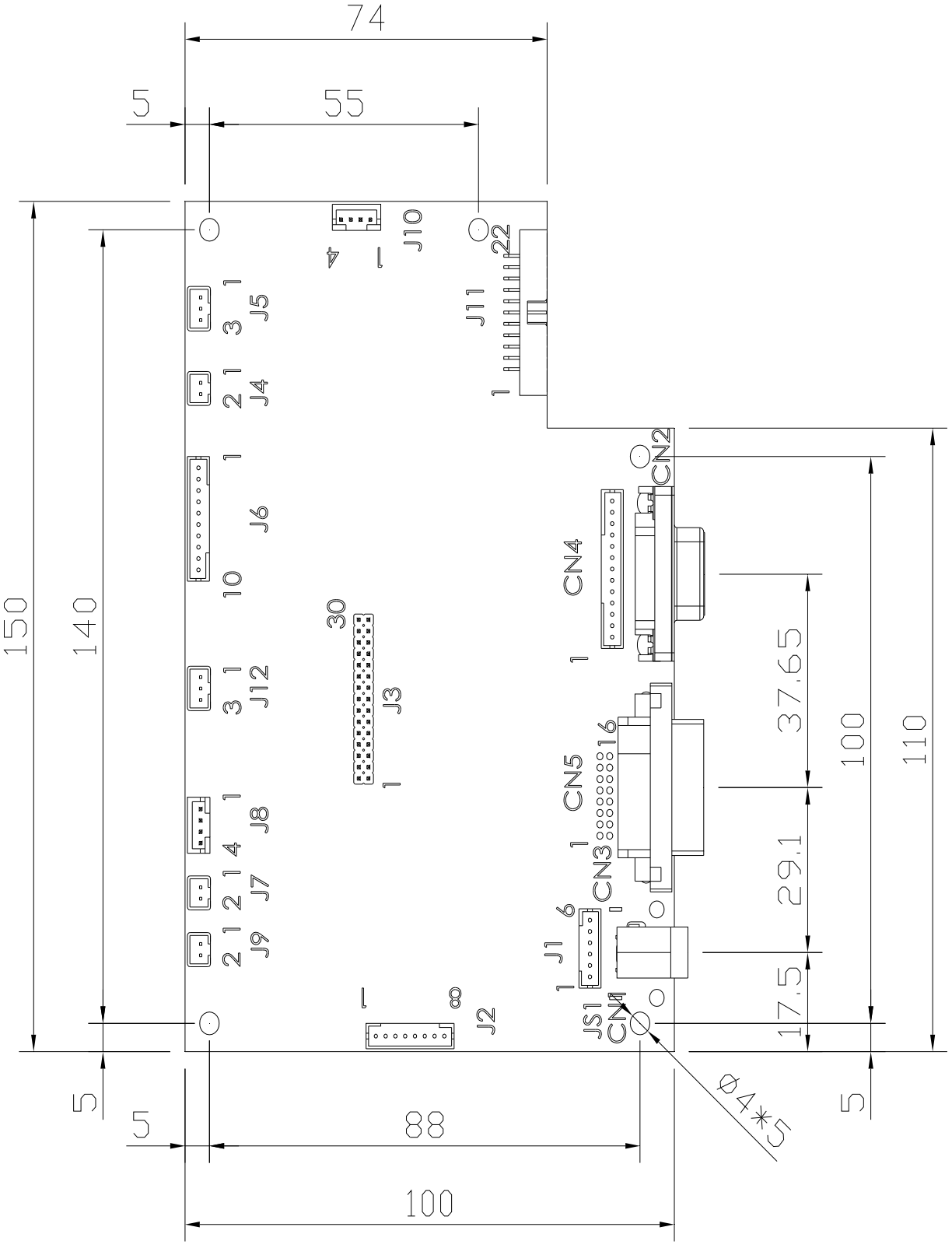
We developed this A/D board to support industrial high brightness and commercial applications. This A/D board has many functions. It has an external luminance sensor as an option, an optional VR button to control brightness, fan rotation and RS232. Rev.1 is European RoHS compliant.

6.1 General Description

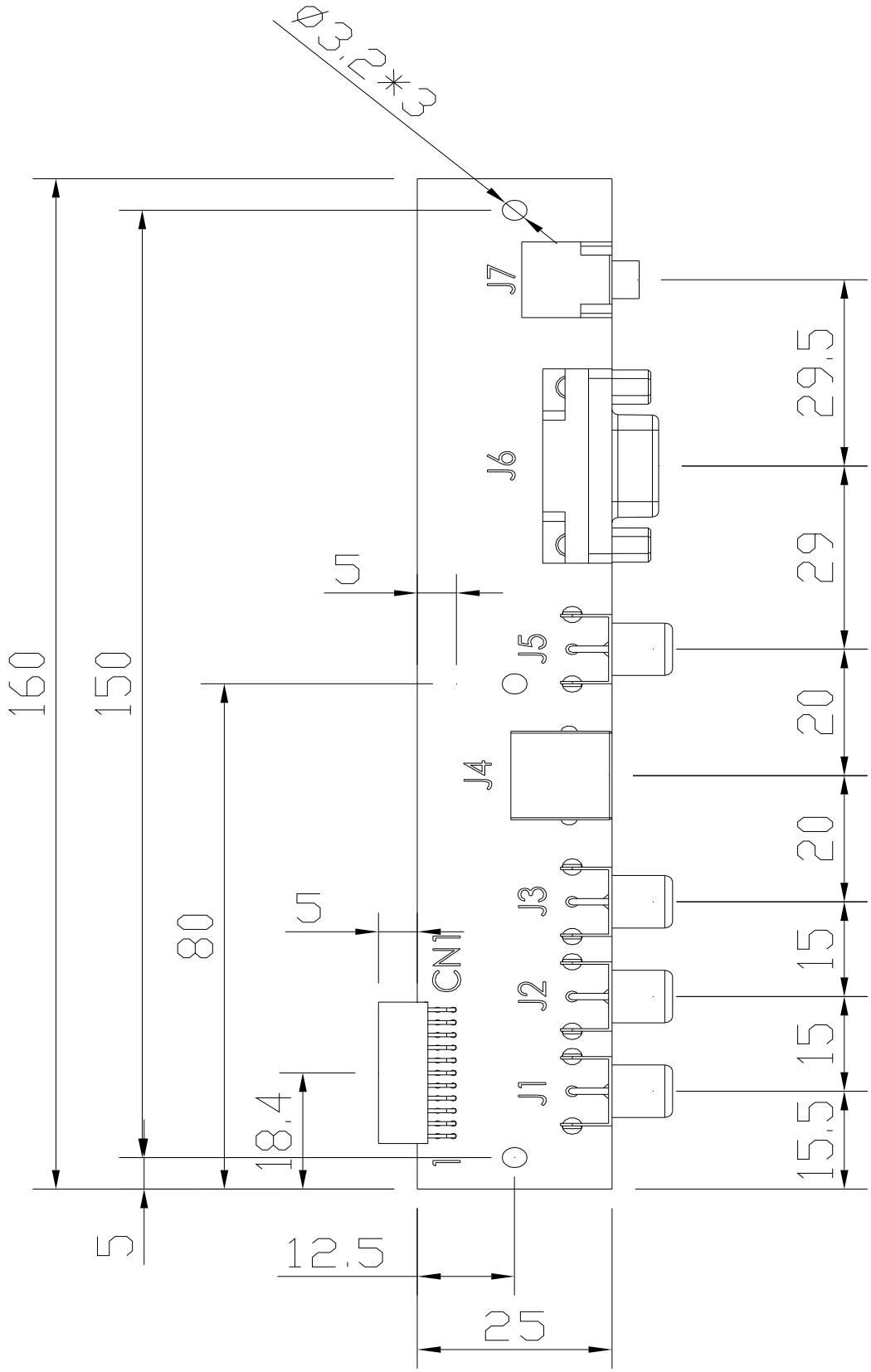
- Max Resolution Up To WUXGA
- Analog RGB Input up to 205MHz
- ULTRA-RELIABLE DVI INPUT
- Dual/single LVDS interface
- Support Panel DC5V or 3.3V, 12V Output
- External Fan Control by Software
- OSD Control
- Inverter Analog or PWM Dimming Control
- *External V.R. brightness control (optional)
- *External light sensor brightness control (optional)
- *External RS232 control (optional)
- Input Power 12V DC
- CBVS, S-VIDEO, YCbCr INPUT
- Audio in and b2Wx2 Audio Out(optional)
- IR Remote control(optional)

6.2 Outline Dimensions

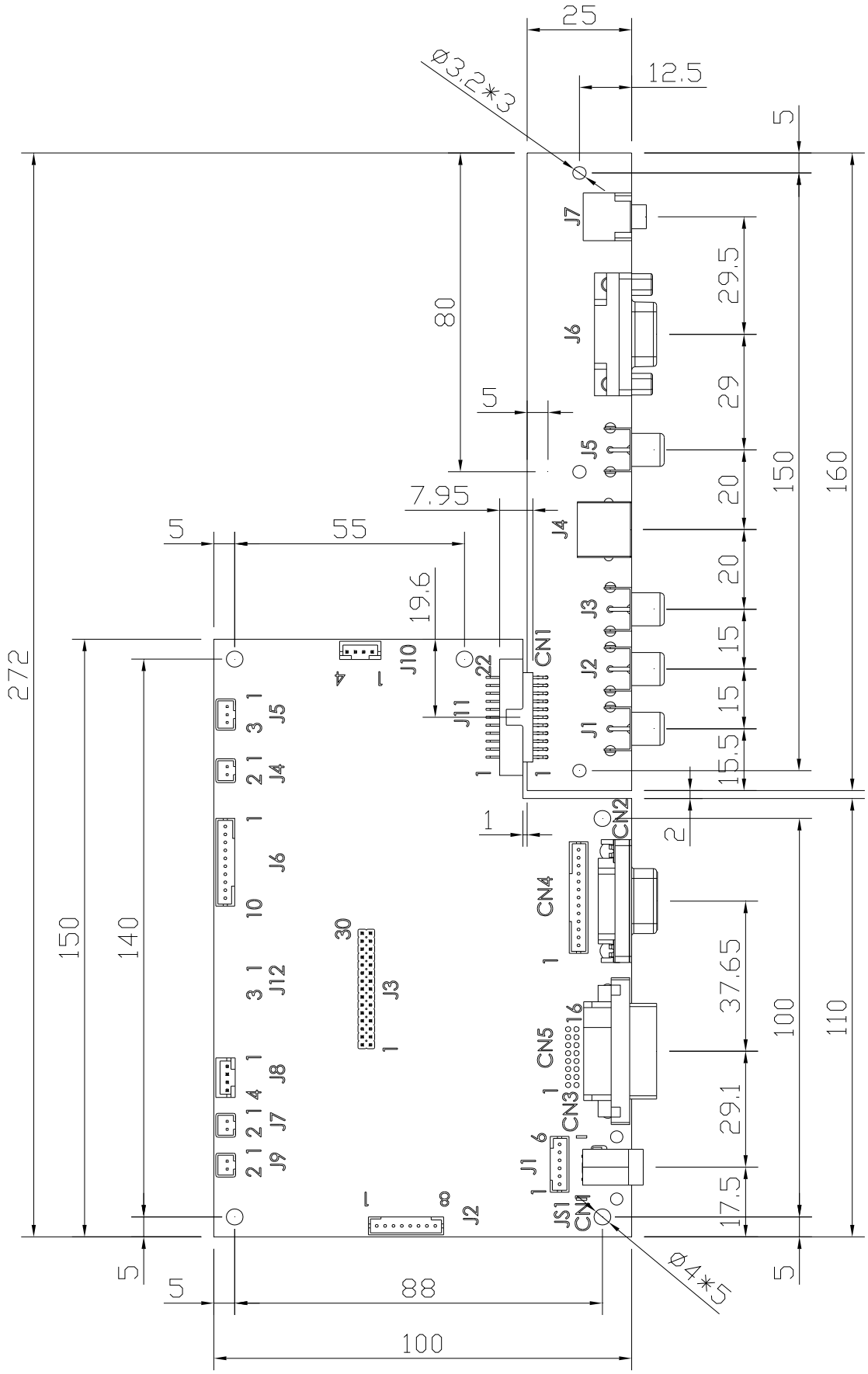
AD2662GD 150mmX100mmX20mm



I/O BOARD 160mmX25mmX15mm



AD2662GDVAR 272mmX100mmX20mm



6.3 AD2662 Board Pin Define

J3: Panel connector

Pin No.	Function	Pin No.	Function
1	RxO0+	16	RxE1-
2	RxO0-	17	RxE2+
3	RxO1+	18	RxE2-
4	RxO1-	19	RxEC+
5	RxO2+	20	RxEC-
6	RxO2-	24	RxE3+
7	RxOC+	22	RxE3-
8	RxOC-	23	GND
9	RxO3+	24	GND
10	RxO3-	25	GND
11	GND	26	GND
12	GND	27	GND
13	RxE0+	28	PANEL-VCC
14	RxE0-	29	PANEL-VCC
15	RxE1+	30	PANEL-VCC

CN3: DVI-D INPUT Connector

Pin No.	Function	Pin No.	Function	Pin No.	Function
1	T.M.D.S. Data2-	9	T.M.D.S. Data1-	17	T.M.D.S. Data0-
2	T.M.D.S. Data2+	10	T.M.D.S. Data1+	18	T.M.D.S. Data0+
3	T.M.D.S. Data2/4 Shield	11	T.M.D.S Data1/3 Shield	19	T.M.D.S. Data0/5 Shield
4	T.M.D.S. Data4-	12	T.M.D.S. Data3-	20	T.M.D.S. Data5-
5	T.M.D.S. Data4+	13	T.M.D.S. Data3+	24	T.M.D.S. Data5+
6	DDC Clock	14	+5V Power	22	T.M.D.S. Clock Shield
7	DDC Data	15	Ground (for +5V)	23	T.M.D.S. Clock+
8	Not Connected	16	Hot Plug Detect	24	T.M.D.S. Clock-

CN5: DVI-D Connector (16pin 2.0mm)

Pin No.	Function	Pin No.	Function	Pin No.	Function
1	RX2-	7	DDC_SDA	13	GND
2	RX2+	8	DDC_SCL	14	GND
3	RX1-	9	GND	15	DVI HP
4	RX1+	10	GND	16	DVI_5V
5	RX0-	11	RXC-		
6	RX0+	12	RXC+		

CN2: Analog RGB Input connector (D-SUB 15Pin)

Pin No.	Symbol	Description	Pin No.	Symbol	Description
1	RED	Analog Red	9	+5V	+5VDDC
2	GREEN	Analog Green	10	SGND	Sync GND
3	BLUE	Analog Blue	11	NCD	Reserved
4	GND	Reserved	12	SDA	DDC Serial Data
5	NC	VGA_CAB	13	HSYNC	Horizontal Sync
6	RED_RTN	Red Return	14	VSYNC	Vertical Sync
7	GREEN_RTN	Green Return	15	SCL	DDC Data Clock
8	BLUE_RTN	Blue Return			

CN4: Analog RGB Input connector (13pin connector)

Pin No.	Symbol	Description	Pin No.	Symbol	Description
1	SCL	DDC Data Clock	8	BGND	Blue Return
2	SDA	DDC Serial Data	9	BLUE	Analog Blue
3	GND	Reserved	10	GGND	Green Return
4	+5V	+5VDDC	11	GREEN	Analog Green
5	GND	Reserved	12	RGND	Red Return
6	VSYNC	Vertical Sync	13	RED	Analog Red
7	HSYNC	Horizontal Sync			

JS1: Power DIN(12V)

Pin No.	Function	Pin No.	Function
1	12VDC	2	12VDC
3	GND	4	GND

JS1: Power Jack (12V)

Pin No.	Function	Pin No.	Function
1	12VDC	2	12VDC

J1: Power connector (12V) (6PIN 2.0mm)

Pin No.	Function	Pin No.	Function
1	12VDC	4	GND
2	12VDC	5	GND
3	12VDC	6	GND

J8: Power connector (5V/12v)(4PIN 2.0mm)

Pin No.	Function	Pin No.	Function
1	5VDC	2	GND
3	12VDC	4	GND

J2: Inverter Connector(8PIN 2.0mm)

Pin No.	Symbol	Description	Pin No.	Symbol	Description
1	ON/OFF	Backlight ON/OFF	5	GND	GND
2	BRIGHT	Dimming adjust	6	12VDC	Input 12VDC
3	GND	GND	7	12VDC	Input 12VDC
4	GND	GND	8	12VDC	Input 12VDC

J7, J9: FAN (2PIN 2.0mm)

Pin No.	Function	Pin No.	Function
1	FAN(+)	2	GND

J6: Key Pad (9PIN 2.0mm)

Pin No.	Function	Pin No.	Function
1	POWER KEY	6	MENU KEY
2	GREEN LED	7	AUTO KEY
3	RED LED	8	GND
4	DOWN KEY	9	GND
5	UP KEY		

J10: Speaker Connector (4PIN 2.0mm)

Pin No.	Function	Pin No.	Function
1	SPK-R	2	GND
3	GND	4	SPK-L

J11 Extern Funtion Connector (11P X 2PIN 2.0mm)

Pin No.	Function	Pin No.	Function
1	Pb	2	Y
3	GND	4	Pr
5	GND	6	SY
7	GND	8	SC
9	GND	10	AV
11	GND	12	GND
13	TXD	14	RXD
15	GND	16	GND
17	GND	18	GND
19	Audio-L	20	Audio-R
24	GND	22	GND

J5: Ambient (3PIN 2.0mm)

Pin No.	Function	Pin No.	Function
1	3.3VDC	2	Sensor Out

J4: VR connector (3PIN 2.0mm)

Pin No.	Function	Pin No.	Function
1	3,3VDC	2	VR Out
3	GND		

J12: IR Connector(3PIN 2.0mm)

Pin No.	Function	Pin No.	Function
1	IR Out	3	3.3VDC
2	GND	4	

JP1: PANEL VCC (3PIN 2.54mm)

Pin No.	Function	Pin No.	Function
1-2	12V	5-6	3.3V
3-4	5V		

6.4 I/O BOARD Pin Define

J1:Component Y

Pin No.	Function	Pin No.	Function
1	Y	2	GND

J2:Component Cb

Pin No.	Function	Pin No.	Function
1	Cb	2	GND

J3:Component Cr

Pin No.	Function	Pin No.	Function
1	Cr	2	GND

J4:S-Video

Pin No.	Function	Pin No.	Function
1	GND	2	GND
3	Luminance	4	Chrominance

J5:Composite

Pin No.	Function	Pin No.	Function
1	Y	2	GND

J6:D-SUB9(RS232)

Pin No.	Function	Pin No.	Function
1	NC	2	TXD
3	RXD	4	NC
5	GND	6	NC
7	NC	8	NC
9	NC		

CN1:11P X 2 Connector

Pin No.	Function	Pin No.	Function
1	Component Cb	2	Component Y
3	GND	4	Component Cr
5	GND	6	S-Video Y
7	GND	8	S-Video C
9	GND	10	Composite
11	GND	12	GND
13	TXD	14	RXD
15	GND	16	GND
17	GND	18	GND
19	Audio IN(L)	20	Audio IN(R)

6.5 IR Receive Board Pin Define

J1: IR Connector

Pin No.	Function	Pin No.	Function
1	DATA OUT	2	GND
3	VCC	4	NC

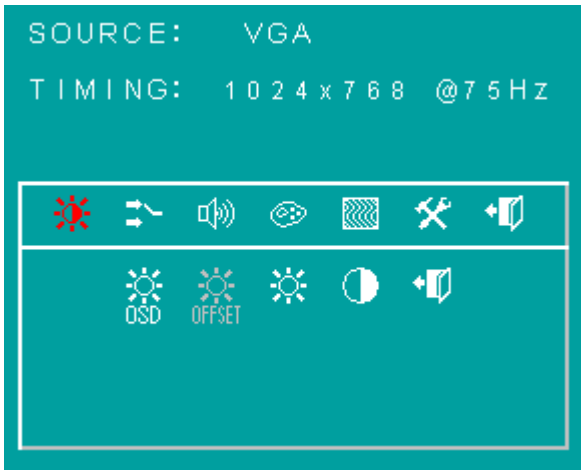
6.6 DC Characteristics.

Power Consumption	10W	Note1
Operation Temperature	0~70	℃
Storage Temperature	-20~85	℃

Note: These values are for the A/D board body.

6.7 OSD menu

Here are some instructions for you to use the OSD (On Screen Display). By pressing the “menu”, you will see the below picture.
Timing shows resolution, H-frequency, and V-frequency of the panel. Version shows the firmware control version. This 2 information is not changeable by user.



There are 7 sub pages inside the OSD manual, Brightness, Signal select, Sound, Color, Image, Tools, and Exit.

When you press “menu” button, you enter the “Brightness” sub page. You will see 5 selections:

OSD press ’’menu’’ Light press ’’menu VR press ’’menu’’

OSD **OSD Brightness:**

OSD press ’’right’’ key

press “menu” once, you can go into adjust the brightness. Press “left” you can dim down the brightness to “0”, while press “right” you can increase the brightness to “100”.

Light **Ambient light sensor:** press this Icon, must to accompany with Litemax ambient light sensor to auto dimming.(OPTION)

VR **Potentiometer:** press this icon, adjust VR function.(OPTION)

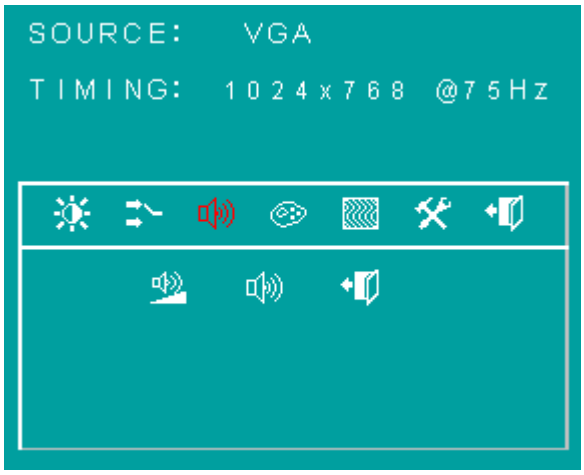
OFFSET **Ambient light sensor with OSD offset**: press this Icon

OFFSET Press ’menu’’ once, you can adjust min. luminance to fit your application (OPTION)

Contrast: Press “menu” and “right” you can adjust the contrast from “0” to “100” by pressing the “left” and “right”.

Exit: You can exit this sub menu back to normal screen.

Sound :



There are 3 options for “Sound” sub page.

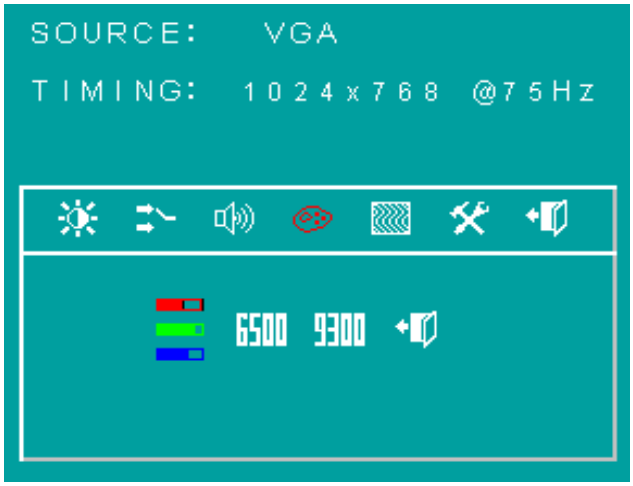
Audio Volume: Audio volume adjustment.

Mute: You can mute the speaker by pressing this option.

Exit: back to the normal screen.

Auto Color: by press this “Auto Color” option, you can get the optimal color performance.

SRGB: Windows standard color setting.



Color Tempture: You can have 3 options in this selection.

Color Tempture User

Color Tempture_6500K

Color Tempture_93OOK

“user mode”, “6500K” (Warm color scheme), “9300K (Cold color scheme).
Def ault is “user”, and inside all “R”, “G”, and “B” are set “100”

Exit: back to the normal screen.

Image :

Go into the “Image” page, you can see below picture.

Auto just: Pressing this option, the AD2662 will adjust the optimal frequency of horizontal and vertical. You will see “Auto tune….” On the screen for around 3 seconds.

Clock: If you are not satisfied about the Autotune result, you can adjust manually by “Clock”.
The screen will be “wider” if you adjust this function.

Phase: If you see “double image” on characters, you can adjust “Phase” to make it perfect image.

HPos: You can shift the screen horizontally by this function.

Vpos: You can shift the screen vertically by this function.

Exit: Back to normal screen.

TOOLS :

On the “Tools” sub menu, you will see 4 icons.

Osd Control: Select this option, you will see 4 more options:

Osd_time: You can selection the time of OSD from 2 sec. to 16 sec. D

Osd_HPos: You can move the OSD horizontally over the screen.

Osd_VPos: You can move the OSD Vertically over the screen.

Exit: back to main menu.

Factory_Reset: By pressing this, the screen will be back to the factory setting on very beginning and lost all the personal settings.

Sharpness: You can make the characters looks sharper.

Exit

BURNIN MODE :

Factory Burn-in mode: While your VGA cable is connected on the monitor, press “Menu” and Left and Right <” simultaneously, you will see “BURN IN MODE” on the center of the screen for 3 sec. Then unplug the VGA cable, the screen will show Red, Green, Blue, White, and Black in sequence automatically.
You can plug in the VGA signal cable,and re-plug the power connector to exit the burn-in mode.

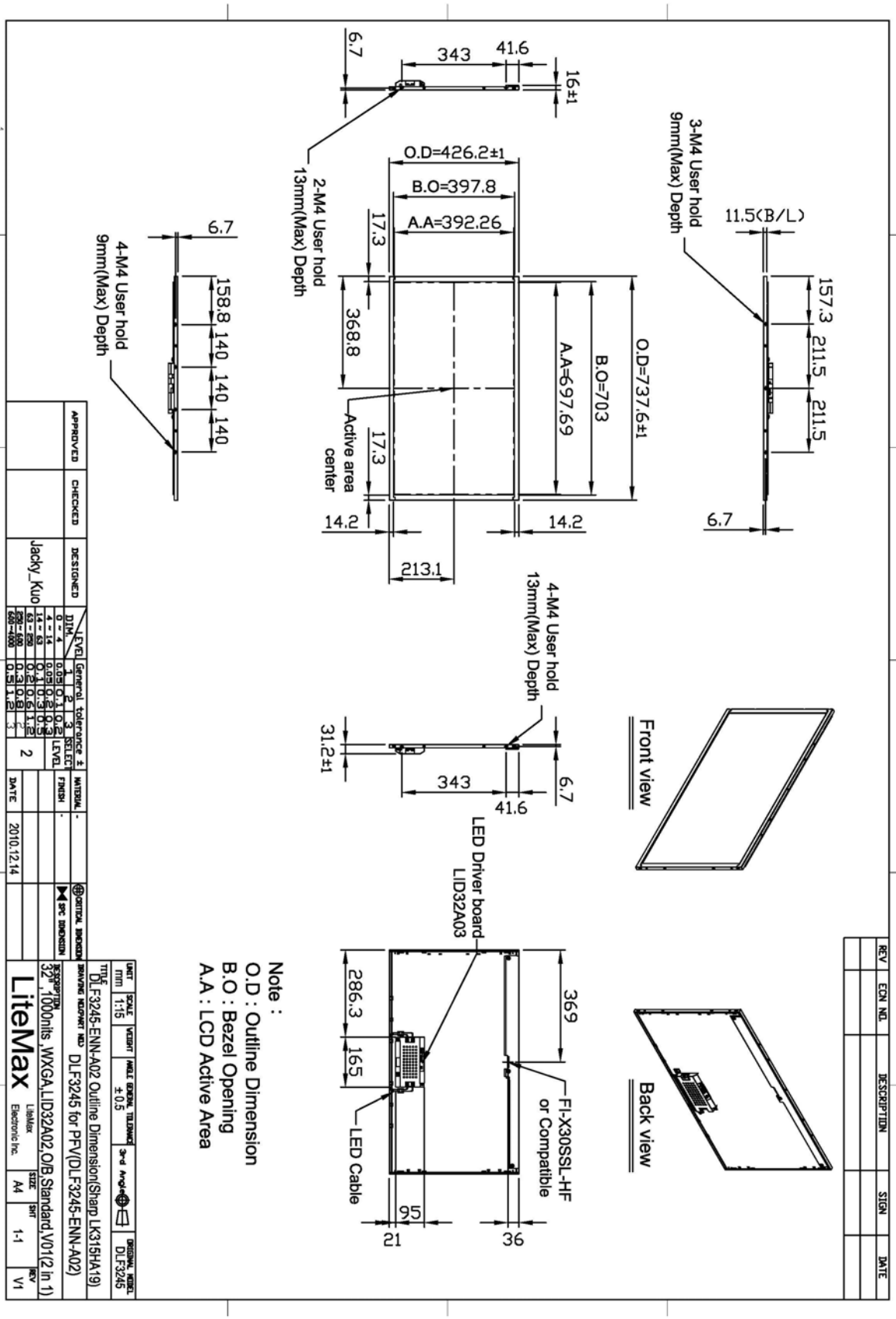
KEY LOCK MODE :

OSD Lock Function: It is possible to lock all the OSD buttons to prevent unauthorized changes to occur by pressing “Menu” and “right >” buttons simultaneously. You will see the “lock” icon below on the center of the screen for 3 seconds. If any button is pushed after the lock function is initiated, the below icon will appear on the screen.'

To release the OSD lock, press “Menu” and “Right >”. The below icon will appear on the center of the screen for 3 seconds. Now all OSD keys are active again.

7.0 MECHANICAL DRAWING

DLF3245-ENN-A04



8.0 PRECAUTIONS

HANDLING PRECAUTIONS

(1) The module should be assembled into the system firmly by using every mounting hole. Be careful not to twist or bend the module.
(2) While assembling or installing modules, it can only be in the clean area. The dust and oil may cause electrical short or damage the polarizer.
(3) Use fingerstalls or soft gloves in order to keep display clean during the incoming inspection and assembly process.
(4) Do not press or scratch the surface harder than a HB pencil lead on the panel because the polarizer is very soft and easily scratched.
(5) If the surface of the polarizer is dirty, please clean it by some absorbent cotton or soft cloth. Do not use Ketone type materials (ex. Acetone), Ethyl alcohol, Toluene, Ethyl acid or Methyl chloride. It might permanently damage the polarizer due to chemical reaction.
(6) Wipe off water droplets or oil immediately. Staining and discoloration may occur if they left on panel for a long time.
(7) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contacting with hands, legs or clothes, it must be washed away thoroughly with soap.
(8) Protect the module from static electricity, it may cause damage to the C-MOS Gate Array IC.
(9) Do not disassemble the module.
(10) Do not pull or fold the lamp wire.
(11) Pins of I/F connector should not be touched directly with bare hands.

STORAGE PRECAUTIONS

(1) High temperature or humidity may reduce the performance of module. Please store LCD module within the specified storage conditions.
(2) It is dangerous that moisture come into or contacted the LCD module, because the moisture may damage LCD module when it is operating.
(3) It may reduce the display quality if the ambient temperature is lower than 10 ºC. For example, the response time will become slowly, and the starting voltage of lamp will be higher than the room temperature.

OPERATION PRECAUTIONS

(1) Do not pull the I/F connector in or out while the module is operating.
(2) Always follow the correct power on/off sequence when LCD module is connecting and operating. This can prevent the CMOS LSI chips from damage during latch-up.